

CLAIMS

1. Finite interpolar gap undivided cell for electrochemical processes with anodic oxygen evolution, comprising an anode package consisting of vertical planar anodes secured to an anode rack and a cathode package consisting of vertical planar cathodes secured to a cathode frame and intercalated to said anodes, said anode rack and said cathode frame provided with means for the reciprocal fixing in a reversible fashion so as to alternatively allow the individual extraction of said cathode package or the concurrent extraction of said anode package and said cathode package.
2. The cell of claim 1 further comprising a lower feed manifold and an upper electrolyte outlet fed through an optionally adjustable overflow.
3. The cell of claim 1 or 2 comprising an anode bus-bar secured to the upper part of said anode rack.
4. The cell of any one of the previous claims wherein said anodes comprise a titanium or valve metal substrate and a noble metal oxide-based catalytic coating for oxygen evolution.
5. The cell of any one of the previous claims wherein said anodes are fixed to said anode rack in at least four points, two upper and two lower points.
6. The cell of any one of the previous claims wherein said anode rack comprises insulating guides optionally of plastic material for aligning said cathodes in an intercalated position with respect to said anodes.
7. The cell of any one of the previous claims wherein said planar cathodes are in form of stainless steel or nickel sheet.
8. The cell of any one of the previous claims wherein said planar cathodes are secured to said cathode frame in at least two upper points in electrical connection with a cathode bus-bar.
9. The cell of any one of the previous claims further comprising an external containing basin.
10. The cell of any one of claims 1 to 8 further comprising containing side-walls fixed to said anode rack.
11. A metal electrowinning process comprising the electrolysis of a deposition

bath by means of the cell of any one of claims 1 to 10.

12. A water softening process comprising the microelectrolysis of waters containing calcium and/or magnesium carbonate fed from the bottom in the cell of any one of claims 1 to 10, with deposition of said calcium and/or magnesium carbonate on said planar cathodes and extraction of softened water from the top.

13. The process of claim 12 comprising the periodic extraction of said cathode package and the subsequent removal of said calcium and/or magnesium carbonate deposited on said planar cathodes.

14. The process of claim 13 wherein said calcium and/or magnesium carbonate removal is carried out by mechanical means.